UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Technical Standards Committees
(Electric)

Supplement No. 1, October 1980, to
REA Bulletin 43-5
LIST OF MATERIALS ACCEPTABLE FOR USE ON
SYSTEMS OF REA ELECTRIFICATION BORROWERS

The attached pages for the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers" are those which have been revised by action of the Technical Standards Committees during the months of July through September 1980. The following changes should be made in order to keep it up to date. Pages with a colon between are on the same sheet, both being changed.

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cz	cz		
fc(1.1)	-		
fc(2)	fc(2)		

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D

E

F

G

H

I

K

L

M

f - Pin, crossarm
(With square washer, nut and locknut)

TRANSMISSION

Thread (inches diameter)	1-3/8	1-3/8
Length above base (inches)	10	10
Length below base (inches)	7	1-3/4
Shank (inches diameter)	3/4	3/4
	Long Shank	Short Shank
Chance	4332	-
Joslyn	J610*	J633*
Kortick	K7643	K7635
McGraw-Edison	DP7T9*	DP5T24*
Utilities Service	3140	3145

* "Static proof" designs available.

g - Crossarms

Applicable Specification: REA Specification DT-5B:PE-16 for Wood Crossarms (Solid and Laminated), Transmission Timbers and Pole Keys

Crossarm Manufacturing and Treating

Firms listed below have acceptable facilities for manufacture and treatment of crossarms or may have their crossarms treated at any one of the plants listed in the sections g or zz.

Company	Plant Location
Alabama Wood Treating Corp.	Mobile Alabama
American Creosote Works	Jackson, Tennessee
American Crossarm Company	Whitehouse, Florida
American Crossarm & Conduit Co.	Chehalis, Washington (1)
Anthony Forest Products	El Dorado, Arkansas (2) (3)
Atlantic Wood Industries, Inc.	Fruitland, Maryland
Brooks Lumber Company	Bellingham, Washington (1)
Conroe Creosoting Co.	Conroe, Texas
Dis-Tran, Inc.	Alexandria, Louisiana
Cascadian Co., Inc.	Eugene, Oregon (3)
Crown Zellerbach	Gulfport, Mississippi
Fordyce Wood Perservers, Inc.	Fordyce, Arkansas
R. G. Haley International Corp.	Bellingham, Washington
Hatheway-Patterson Corp.	Houston, Texas
Hughes Brothers	Seward, Nebraska (1)
International Paper Company	DeRidder, Louisiana
Joslyn Mfg. & Supply Company	Portland, Oregon
Koppers Company	Gainesville, Florida
	Salisbury, Maryland
	Morrisville, N. C. (2) (3)
Langdale Company	Valdosta, Georgia
Lockhart Company	Lockhart, Alabama
Wm. C. Meredith Co.	Atlanta, Georgia
Moss-American, Inc.	Meridian, Mississippi
Neidermeyer-Martin Company (Pacific Wood Treating Corp.)	Ridgefield, Washington
Pennington West Coast Sales Co.	Beardstown, Illinois (3)
	Eugene, Oregon (3) (1)
Plantation Wood Products, Inc.	Albany, Georgia
Southern Wood Piedmont Co.	East Point, Georgia
	Spartanburg, South Carolina
Structural Wood Systems	Greenville, Alabama (2) (3)
John C. Taylor Lumber Sales, Inc.	Sheridan, Oregon
Texas Tie & Timber Company (W. J. Smith Wood Perserving Co.)	Denison, Texas
Utility Structures Engineering, Inc.	Fresno, California (2) (3)
Weekly Lumber Company	Rockledge, Florida
	Tampa, Florida
Wyckoff Company	Seattle, Washington

(1) Laminated & Solid Sawn
(2) Laminated Only
(3) Crossarm Manufacturing Only
No Number Indicates Solid Sawn Only

k - Insulators, suspension

ANSI Class Type	52-9 Clevis	52-1 Clevis	52-4 Clevis	52-3 Ball & Socket
Disc Diameter	4¼"	6"	9" or 9½"	9" or 9½"
M & E Rating, lbs.	10,000	10,000	15,000	15,000
Leakage, inches	6-3/4	7	11½	11½
Flashover; kV: Dry-Wet	60 - 30	60 - 30	80 - 50	80 - 50
NOTES	(3)(4)(6)	(3)(4)	(5)	(2)

Manufacturer	Catalog Number			
Chance	C907-1209	C907-1001 (6)	-	-
Gould-Brown Boveri(ITE)	877	804 (6)	-	-
Joslyn (Pinco)	L1814	L1510	L-970	L-960
Lapp	6815-G70	6605	9100	9000
Locke	16044	16583	15S410	15S409
Ohio Brass	42399	32433	48019	48008
Porcelain Prod. (Knox)	20034	86012	-	-
Sediver	CT-4R2	-	-	-

Notes:

(2) To be used only on transmission lines.
(3) To be used only on distribution lines.
(4) Use two insulators for 7.2/12.5 kV deadends and three insulators for 14.4/24.9 kV deadends.
(5) Use two insulators for 14.4/24.9 kV deadends.
(6) Either malleable iron, steel or aluminum hardware is acceptable.

k - Insulators, suspension

ANSI Class Type	52-3 Ball & Socket	52-4 Clevis	52-5 Ball & Socket	52-6 Clevis
Disc Diameter	10"	10"	10"	10"
M & E Rating, lbs.	15,000	15,000	25,000	25,000
Leakage, inches	11½	11½	11	11
Flashover; kV: Dry-Wet	80 - 50	80 - 50	80 - 50	80 - 50
NOTES	(2)	(1)	(2)	

Manufacturer	Catalog Number		
Joslyn (Pinco)	L1060	L1070	L1500	L1570
Lapp	8200	8100	5960G	2300
Locke	20S840	20S580	30S255	30S257
Ohio Brass	32440	32439	47410	47415
Porcelain Prod. (Knox)	81022	81012	-	-
Sediver		CT-6R2		

Notes: (1) Use two for 14.4/24.9 kV deadends.
(2) To be used only on transmission lines.

k - Insulator, Suspension

Manufacturer	Meeting No. and Date	Conditions
Sediver		
10" suspension insulator	997(7/27/72)	To obtain experience.
N-6R2 (ball & socket, 15,000 lbs.)	1068(6/26/75)	
CT-12R2 (clevis, 25,000 lbs.)	1186(5/8/80)	Same as above
N-12R2 (ball & socket, 25,000 lbs.)	1175(11/2/79)	

Conditional List
k(3)
July 1980

k - Insulator, Distribution Deadend

Manufacturer	Meeting No. and Date	Conditions
Chance		
Distribution deadend Catalog No. C654-0000 "Epoxilator II" (15 kV line-to-line) Catalog No. C654-2500 "Epoxilator II" (25 kV line-to-line)	965 4/22/71 1082 1/22/76 1129 12/15/77	For the purpose of gaining operating experience as follows: 1. For distribution lines only. 2. To be used only in a horizontal position on deadends. Not to be used as vertical suspension insulators. 3. Recommended maximum working load is 5,000 lbs. 4. Not recommended for use in areas subject to contamination.
Joslyn		
Distribution deadend UDI 671-3002	1074 9/25/75 1088 4/15/76	For the purpose of gaining operating experience as follows: 1. For distribution lines only, up to 15 kV line-to-line voltage.
Distribution deadend UDI 671-3010	1074 9/25/75 1088 4/15/76	For the purpose of gaining operating experience as follows: 1. For distribution lines only, up to 25 kV line-to-line voltage.
Plastigage		
Distribution deadend HTA-S1-15 kV HTA-S1-25 kV	1158 3/1/79	To obtain experience.

m - Clamp, suspension

2 BOLT - DISTRIBUTION

	Copper & CWC	ACSR with 4	Straight or 2	Formed 1/0 & 2/0	Armor Rods* 3/0 & 4/0
Anderson/Square D	MS-46-N	MS-60-N	MS-70-N	HAS-85-N	HAS-104-N
Bethea/National	FS-46-N	GW-1-N	LS-0-N	LS-1-N	LS-2-N
Joslyn (Brewer-Titchener)	6240	6241	6242	6243	6244
C & R Products	-	-	-	CRSC-1	CRSC-2
Knox	6240A-U	6241A-U	6242A-U	6243A-U	6244A-U
Lapp	305740N	306027N	306028N	306029N	306030N
Ohio Brass	83044	83064	83074	83084	83104
Preformed	-	-	-	-	AGS*
Gould-Brown Boveri (ITE)	6240	6241	6242	6243	6244
Barron Bethea	FWG-1	FWG-2	FWG-3	FWG-4	-

*Accepted for larger sizes.

m - Clamp, Suspension

ANGLE - DISTRIBUTION No. 2 & 4 ACSR Plus Rods		2-BOLT TRANSMISSION For 3/8" Steel Overhead Ground Wire
AAC-68-90	Anderson/Square D	MS-46-N
-	Barron Bethea	FGW-1
RALS-1	Bethea/National	FS-46-N
AC-75	Continental	FSC-46N
GD-907A	Fargo	-
2300	Gould-Brown Boveri (ITE)	6240
2300	Joslyn (Brewer-Titchener)	6240
2300	Knox	6240A-U
306092	Lapp	305740N
82860	Ohio Brass	83044

p - Connectors

Applicable Specification: "REA Specification for Connectors," DT-8

ACSR to ACSR
To same size or smaller

	Bare Conductor			
	4/0 - 2/0	1/0	2	4
ALCOA	190	396.6	490.0	490.0
Anderson/Sq. D	LC-53A	LC-51C	LC-51A	LC-51A
Bethea/National	APG-3	APG-2	APG-1	APG-1
Blackburn	PAE 4141-9	PAE 2121-9	PAA2	PAA2
Burndy	KVS28A	UCG25R	UC25R2R	UC25R2R
Fargo	GA-614	GA-620	GA-620	GA-620
Joslyn	6053	6052	6052	6052
Penn-Union	PCAA-20BF	PCAA-15BF	PCAA-10BF	PCAA-10BF
Reliable	6053	6052	6052	6052
Weaver	NICA12	NICA60	NICA2	NICA2

p - Connectors
ACSR to ACSR
To same size or smaller

Over Armor Rods

	3/0	2/0	1/0	2	4
ALCOA	200	R196	R196	R196	198
Anderson/Sq. D	LC-83A	LC-52C	LC-52C	LC-52C	LC-52C
Blackburn	-	-	PAA10	PAA10	PAA10
Burndy	-	-	UC32R	UC32R	UC32R
Fargo	GA-9843	GA-9842	GA-616	GA-616	GA-616
Joslyn	-	-	744AL	600AL	600AL
Penn-Union	-	-	ARC-12	ARC-11	ARC-14
Reliable	-	-	744AL	600AL	600AL
Weaver	-	-	NICR60	NICR60	NICR60

ACSR to Guy Strand

	2/0	1/0	2 & 4
ALCOA	396.6	396.6	490.0
Anderson/Sq. D	LC-52A-GP	LC-51C-GP	LC-51A-GP
Bethea/National	APG-3	APG-2	APG-2
Blackburn	PAE 2121-9	PAE 2121-9	PAA5
Burndy	UC28R	UCG25R	UCG25R
Dossert	AC103-LW	AC101-LW	AC100-LW
Fargo	GA-616	GA-620	GA-620
Joslyn	744AL	555AL	438AL
Penn-Union	ALC-15	ALC-10	PCA-010
Reliable	744AL	555AL	438AL
Weaver	NICR60	NICA60	NICA60

p - Connectors
Copper Type Conductors
Connections to same size or smaller

C'weld Copper	2A		4A	6A	8A
Copper	0x7	2x3		4	6

Bare Conductor

Anderson/Sq. D	DG-1/0	DG-1	DG-2	DG-4	DG-6
Blackburn	1/OH	1H	2H	4H	6H
Burndy	KS-25	KS-23	KS-23	KS-20	KS-17
Dossert	DS-10-F	DS-6-F	DS-6-F	DS-3-F	DS-2-F
Fargo	GC-5020	GC-5002S	GC-5002	GC-5004	GC-5006
Frankel	B-1/0	B-2	B-3	B-4	B-6
Greaves	-	A-8		A-5	A-3
ILSCO	IK-1/0	IK-2	IK-2	IK-4	IK-6
Joslyn	-	IF	2F	4F	6F
Kearney	118109	118109	118108	118104	118102
Krueger & Hudepohl	UC58C-EV	-	-	-	-
Penn-Union	S1/0	S2	S3	S4	S6
Reliable	-	1F	2F	4F	6F
Royal Elec. Mfg.	1739	1739	-	-	-
Sherman	TS1/0	TS2ST	TS-2	TS-4	TS-6
Weaver	10W	1W	2W	4W	6W

Over Armor Rods

Anderson/Sq. D	K-5	K-4	K-4	K-2	K-2
Blackburn	2B350	2B350	2B4/0	2B2/0	2B1/0
Burndy	KVS-31	KVS-31	KVS28	KVS26	KVS26
Fargo	GC-5035	GC-5035	GC-5040	GC-5020S	GC-5020
ILSCO	IKB-350	IKB-350	IKB-4/0	-	-
Kearney	118112	118112	118111	118110	118110
Penn-Union	VT-4	VT-3	VT-3	VT-2	VT-1
Weaver	350CX	350CX	4/OCX	2/OCX	1/OCX

p - Connectors
Copper Type Conductors

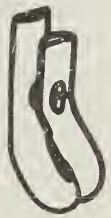
	Copper to Guy Strand	Long Connectors Copper to Copper		
		2	4	6
Anderson/Sq. D	LC-511A	C-2-L	C-4-L	C-6-L
Blackburn	2HPW (1/4") 1/0HPW (3/8") PAC7	2H3	4H3	6H3
Burndy	UC8W26L	KS-22-3	KS-20-3	KS-17-3
C & R	CRJC-1	-	-	-
Dossert	UDV 13-1-P	DS5-3	DS3-3	DS2-3
Fargo	GC-8040P	-	-	-
Greaves	-	A-9	A-6	A-4
ILSCO	SK-3 (1/4") SK-1/0 (3/8")	-	-	-
Joslyn	438ALC	-	4-F	6F
Kearney	9968-1	118107	118105	118103
Krueger & Hudepohl	UC58B-EV	-	-	-
Penn-Union	JC-1-AC (1/4", 3/8" guy strand) (1/0 strand copper max.)	SEL-3	SEL-4	SEL-6
Reliable	438ALC	-	4F	6F
Sherman	R-12	-	TSS-4	TSS-6
Weaver	K-1	2W3	4W3	6W3

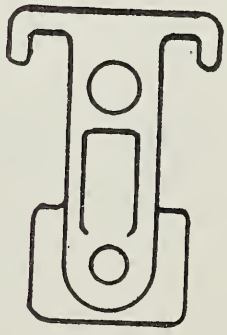
u - Deadend for alumoweld guy strand

Strand Size	7#12(6M)	7#11(8M)	7#10(10M)	7#9(12.5M)
Formed Type Alumoweld Guy Strand				
Chance				
For standard guy	6M-AWSBG	8M-AWSBG	10M-AWSBG	12.5M-AWSBG
Helical Line Prod.				
For standard guy	HG517-6M	HG519-8M	HG521-10M	HG523-12.5M
Preformed Line Prod.				
For standard guy	AWDE-4110	AWDE-4113	AWDE-4116	AWDE-4119
For wrapped guy	WGL-4110	WGL-4113	WGL-4116	WGL-4120
Automatic Alumoweld Guy Strand				
Reliable	5200	5201	5201	5202

v - Guy attachement for 5/8" bolt

Type:	Formed Strap	Angle Bolt Eye	Guy Hook	Pole Eye Plate
Maximum Working Load Rating	23,130 N (5200 lbs.)	23, 130 N (5200 lbs.)	23,130 N (5200 lbs.)	37,800 N (8500 lbs.)
Anderson Elec./ Square D	-	-	-	GSP-05
Barron Bethea	-	-	GH-5*	-
Bethea/National	-	-	AG-5*	PE5-6A
Chance	5004	0100	C203-0168*	-
Continental Elec.	-	-	GA-54*	PEP-66-45
Dixie	D5004	D0100	DD-9460, DD9462*	-
Flagg (MIF)	-	-	P135A, P157X*	PX88
Joslyn	J25164	J6500	J6555, J6556	-
Kortick	K4035, K4047	K3140	-	-
Lapp (Line Ware)	-	-	304014*	304021
McGraw-Edison	DG6H1	DG11E1	DG14H1*	-
Power Line Hardware	-	-	GA-58C*	GA-548
Util. Service	31030	5531	-	-





*This hook may also be used in place of the wrapped guy arrangement in assemblies E3-2 and E3-3.

y - Galvanized Steel Strand

Applicable Specification: ASTM A475 (Class A, B or C Coating)

TRANSMISSION GUY STRAND

Grade	High Strength (HS)					Extra High Strength (EHS)				
Size / Manufacturer	1/4"	9/32"	5/16"	3/8"	7/16"	1/4"	9/32"	5/16"	3/8"	7/16"
Alcan Cable	X			X	X	X			X	X
Armco Steel Corp.	X		X	X	X	X		X	X	X
Bethlehem Steel	X			X	X	X		X	X	X
CF&I	X		X	X	X	X		X	X	X
Cal-Wire	X	X	X	X	X	X	X	X	X	X
Florida Wire and Cable	X	X	X	X	X	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X	X	X	X	X	X
Paulsen Wire Rope Corp.	X			X	X	X			X	X
Seal Wire Co.	X			X	X	X			X	X
Southwire	X	X	X	X	X	X	X	X	X	X
U. S. Steel	X		X	X	X	X	X	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A475.

y - Galvanized Steel Strand

Applicable Specification: ASTM A363 (Class A, B or C Coating)

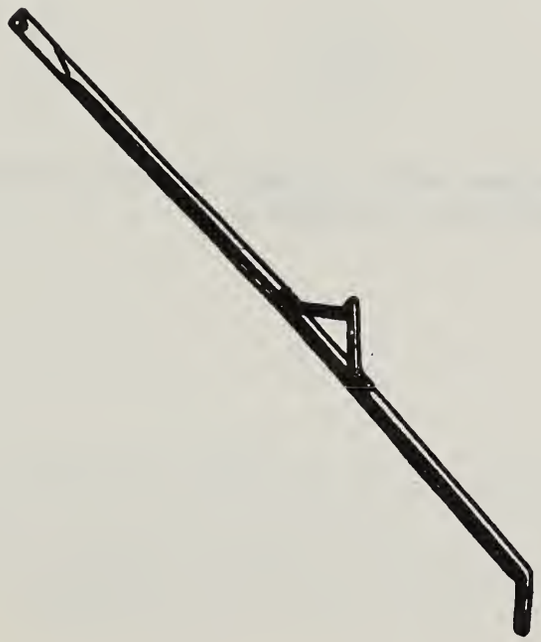
OVERHEAD STATIC WIRE

Grade	High Strength (HS)		Extra High Strength (EHS)		
Size	3/8"	7/16"	5/16"	3/8"	7/16"
Manufacturer					
Alcan Cable	X	X		X	X
Armco Steel Corp.	X	X	X	X	X
Bethlehem Steel	X	X	X	X	X
CF&I	X	X	X	X	X
Cal-Wire	X	X	X	X	X
Florida Wire and Cable	X	X	X	X	X
Indiana Steel and Wire	X	X	X	X	X
Paulsen Wire Rope Corp.	X	X		X	X
Seal Wire Co.	X	X		X	X
Southwire	X	X	X	X	X
U. S. Steel	X	X	X	X	X

Note: The buyer should specify Class A, B or C coating per ASTM Specification A363.

ac - Brace, sidearm diagonal

	1-1/2 inch angle 3/16" x 5'	1-3/4 inch angle 3/16" x 7'
Chance	-	6984
Joslyn	J1521	J1525
Kortick	K1951	K1954
McGraw-Edison	DB1A1	DB1A5
Utilities Service	5210	5212



ae - Surge Arresters, Distribution (Lightning Arresters)

Manufacturer	Type	Ratings, kV	Duty
General Electric	Alugard	9, 10, 18	Heavy
Joslyn	Q	9/10, 18	Normal
	J	9/10, 18	Heavy
Kearney	Unigap	9, 10, 18	Heavy
McGraw-Edison	TS	9/10, 18	Normal
	TL	9, 10, 18	Heavy
Ohio Brass	DA-III	9/10, 18	Normal
	DA-IV	9, 10, 18	Heavy
Westinghouse	LV	9/10	Normal
	LVBB	9/10, 18	Heavy

NOTE: Only arresters with top gaps and without ground lead disconnectors are acceptable.

ae - Surge Arresters, Substation*
(Lightning Arresters)

Manufacturer	Type	Accepted Ratings - kV	Manufacturer's Classification
General Electric	Alugard	3, 9, 10, 18	Distribution
	Alugard	3-312	Station
	Alugard	3-120	Intermediate
Joslyn	RS	9, 10, 18	Distribution
	Q	3, 9/10, 18	Distribution
Kearney	Unigap	3, 9, 10, 18	Distribution
McGraw-Edison	ES	3, 9/10, 18	Distribution
	F2	9-120	Intermediate
	G	3-144	Station
Ohio Brass	GP	3-72	Intermediate
	MPA	3-15	Station
	MP	3-48	Station
	MPR	60-312	Station
	DA	3, 9, 10, 18	Distribution
Westinghouse	LV	3-20	Distribution
	IVL	3-120	Intermediate
	CPL	3-312	Station

*For instructions concerning application at substations refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

Conditional List
ae

July 1980

ae - Surge Arrester, Substation*

Manufacturer	Meeting No. and Date	Conditions
General Electric Surge arrester, station class, metal oxide type, Tranquell, 2.7 kV thru 588 kV	1164 5/24/79	To obtain experience.
Ohio Brass Surge arrester, station class, metal oxide type, Dynovar, 52 kV thru 312 kV	1175 11/2/79	To obtain experience.

*For instructions concerning application at substation refer to REA Bulletin 65-1, "Guide for the Design of Substations for Electric Borrowers." In the purchase of arresters, care should be taken to select the type and voltage rating in accordance with the line voltage and the type of construction (grounded or ungrounded).

af - Power Fuses, Substation

Manufacturer	Type	Voltage Rating
Kearney	HX	15
	HX	27
McGraw-Edison	LMO	15
	EMO	15
	HXO	15-46
S & C Electric	XS	15-25
	SMD (Boric acid)	15-138
Southern States	Series P	15-161
Westinghouse	RDB (Boric acid, refillable)	15-34.5
	DBS (Boric acid, non-refillable)	15-34.5
	DBA (Boric acid, refillable)	46-69

NOTE: All fuses listed on this page should be furnished with NEMA standard insulators. The buyer should specify the current rating, voltage rating, interrupting rating and required accessories.

ag - Fuses, Current Limiting, Backup

Manufacturer	Meeting No. and Date	Conditions
Chance		
15 kV Class Type K-Mate 25 Catalog No. C70L-31KA	1084 2/19/76	1. To obtain experience.
25 kV Class Type K-Mate 25 Catalog No. C70L-32KA	1196 9/18/80	2. Must be used in series with external expulsion fuse 25 K or 15 T or smaller or with CSP transformers 50 kVA or smaller.
General Electric		
15 kV Class Fuse Model 9F59RBC-25 25 kV Class Fuse Model 9F59RBD-25	1094 7/29/76	Same as above.
McGraw-Edison		
15 kV Class No. FAH6H45 25 kV Class No. FAH7H45	1094 7/29/76	Same as above.
Westinghouse		
15 kV Class Type CLTX, 25K/15T 25 kV Class Type CLTX, 25K/15T	1105 1/6/77	Same as above.
RTE		
15 kV Class Catalog No. 3553025M11 25 kV Class Catalog No. 3554025M11	1140 6/1/78	Same as above.

ai - Rods, Ground

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Copper-covered ground rods are listed with a 13 mil minimum at any point and a 15 mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Copper-covered steel rods

	5/8"
Boggs	EB810
Burndy	858-RGR
Calpico	CP588
Carolina Glavanizing	P-588
ITT Blackburn	6258
Joslyn	J8338
Kortick	K5428
Knight	858
Power Line Hardware	PLH-588-C
UTM	858PP
Utilities Service	6617
Weaver	W588
Wilcor	WA588C

Stainless Clad Steel

Manufacturer	5/8"	3/4"
Joslyn	J5374	J5377
Teledyne (MEFCO)	"PERMAGROUND"	"PERMAGROUND"

Applicable Size: The standard length is 8 feet and catalog numbers listed below are for this length. Longer rods may be required for special conditions.

Hot Dip Galvanized Steel

Manufacturer	5/8"	3/4"
Boggs	G588	G348
	PTG588**	PTG348**
Burndy	G588GR	-
Carolina Galvanizing	R588	R688
Chance	8578	8618
	C203-0107**	C203-0109**
Dixie	D8578	D8618
Galvan	GR6258	GR7508
General Electric	0982-00002	0982-00003
Grip-Tite	GT588	GT348
	GT588PT**	GT348PT**
Joslyn	J3358B*	J3458B*
	J5328	J5338
	J5228**	J5238**
Knight	G-588	G-348
	G-588PT**	G-348PT**
Kortick	K4658	K4678
Lloyd	6258H	7508H
McGraw-Edison	DN5S8	DN6S8
	DN6D8*	DN7D8*
Porcelain Products	7338	7348
Power Line Hardware	PLH-588-G	PLH-348-G
Utilities Service	5307	6338
Weaver	8480G	8340G
Wilcor	WA8580G	-

Electro-Galvanized Steel

	5/8"	3/4"
Calpico	G8580	-
LMP	6258E**	7508E**

Stainless Steel

	5/8"	3/4"
Joslyn	23821	23822
Teledyne (MEFCO)	TDY Sol	TDY Sol
Wilcor	WA 588-S	WA 348-S

*Rod furnished with clamp.
**Rod furnished with 4 ft., No. 6 tinned or galvanized copper pigtail.

ai - Rods, ground, sectional

Galvanized steel and
copper-covered steel

Copper-covered ground rods are listed with a 13 mil minimum at any point and a 15 mil average covering of copper. All purchases should specify that a factory certification of the thickness of the copper must accompany the shipment of the rods.

Sectional Ground Rods

Manufacturer	8' long	10' long	Couplings	Driving studs
Blackburn	6258S	6260S	60C	60DS
Carolina Galv.	S-588	S-5810	CR58	DS58
Chance Galv. Steel	-	8512	8611	-
Joslyn Galv. Steel	J9158 J23282.8	J9160 J23282.10	J9182 J23282A	J9186 J9186
Knight	S858	S1058	SC58	DS58
Kortick	K5441	K5443	K5482	K5492
McGraw-Edison Galv. Steel	DN17S8	DN16S10	DN1K2	-
Power Line Hardware	PLH-588CS	PLH-5810CS	CBC-58	DS-58
Weaver	W-588T	W-5810T	158C	358D

aj - Clamp, Ground Rod

Manufacturer	For 5/8" Copper-Covered Rod	For 3/4" Galv. or Stainless Steel Rod	For 5/8" Galv. or Stainless Steel Rod
AMP	Copper AMPACT (Order by Description)	-	-
Anderson	GC-5	-	-
Blackburn	G5	-	-
Boggs	G31	-	-
Burndy	GKP635	-	-
C & R Products	CRGC-58	-	-
Copperweld	ABH58	-	-
Dossert	GNL62H	-	-
*Erico (Cadweld)			
1 ground wire	GR1-161G	GR1-181G	GR1-161G
2 ground wires	GR1-161G	GR1-181G	GR1-161G
Greaves/Mercury	G-580	-	-
Ilsco	GRC-58	-	-
Joslyn	J8392AB	R3459	R3459
Knight	C58	UCSS	UCSS
Krueger & Hudepohl	808	-	-
Kortick	K4647	-	-
O-Z Elec. Mfg.	BG0304	-	-
Penn-Union	CEB-2	-	-
Power Line Hardware	RC-58C	-	-
Reliable	E58	3459	3459
UTM	910-023-03	910-007-02	910-007-02
Weaver	WB5/8	-	-
Wilcor	HGR5/8	-	-

* Includes disposable molds.

ar - Wireholder

Applicable Specification: "REA Specification for Service Wireholders," D-15

	With #22 Wood Screw	With 3/8" x 5" Bolt
Chance	3-11-44	-
Dixie	D3-11-44	-
Joslyn	J089	-
McGraw-Edison	DW1R1	-
Porcelain Products	1986	-
Universal Clay Products	415	-

Note: For triplex type service cable see clevis type wireholders on page "bt."

as

October 1980

as - Clevis, service swinging

Applicable Specifications: "REA Specifications for Service Swinging Clevises," D-7

	Clevis Only*	Clevis with Wet Process Spool	Clevis with Dry Process Spool
Chance	1948C	1948C-C909-1031	1948C-0606
Dixie	D1938	D1938-C	D1948-C
Joslyn	J1614	-	J1615
Kortick	K9260	K9141	K9142
McGraw-Edison	DC7S2	-	-
Utilities Serv.	32003	31003	31004

*Catalog number does not include spool; for spool insulators see Item cm.

at - Guy Marker

8 Foot Length

Steel

Manufacturer	Full Round	Half Round
Joslyn	J1618	J1528
Kortick	K3729	-
McGraw-Edison	DG12G1	DG5G3

at - Guy Marker

8 Foot Length

Plastic or Fiberglass

Manufacturer	Catalog Number
Chance	96-PBG-2 (Gray) 96-PBG-2Y (Yellow) 96-PBG-2GRN (Green) 96-PBG-2ORG (Orange)
Chance*	96-FRG-GRY (Gray) 96-FRG-YEL (Yellow) 96-FRG-GRN (Green) 96-FRG-ORG (Orange)
Electrical Materials*	70-5 (Gray) 70-5Y (Yellow)
Joslyn	J1491Y (Yellow) J1491G (Gray)
Nordic	HRG-8 (Orange)
Preformed Line Products*	PG-5508 (Gray) PG-5518 (Yellow) PG-5528 (Green)
Radar Engineers*	6031 (Yellow)
Virginia Plastics*	TG-125-8G (Gray) TG-125-8Y (Yellow)
Virginia Plastics**	FG-8G (Gray) FG-8Y (Yellow)

*For use with formed or automatic type deadends for guy strand; will not fit over bolt type guy clamps.

**Available with either 1 or 2 bolt clamps.

aw - Washer, Spring

$\frac{1}{4}$ x 1-3/4" x $3\frac{1}{2}$"

Manufacturer	Bolt Size		
	5/8"	3/4"	7/8"
Chance	3540	3541	-
Joslyn	J3540	J3541	J3542
Kortick	K2909	-	-
Fastex (ITW) "Ramp Lok"	1-760-21	1-760-31	1-760-41
McGraw-Edison	DF17W3	DF17W4	DF17W5

ax - Cutout and Arrester, Combination

Nominal System Voltage	For 12.5Y/7.2 kV			For 13.2Y/7.6 kV		For 24.9Y/14.4 kV	
Cutout Max. Voltage Rating	7.8 kV		15 kV	15 kV		18 kV	27 kV
Application	1Ø Trans.	1Ø Sect.	3Ø Bank 3Ø Sect.	1Ø Trans.	3Ø Bank 3Ø Sect. 1Ø Sect.	1Ø Trans.	3Ø Bank 3Ø Sect. 1Ø Sect.
Cutout Current Rating	50*	100	100	50*	100	50*	100
Manufacturer / Mounting Type	Catalog Numbers						
Chance Crossarm		C70J-2B63 Series	C70J-2F53 Series		C70J-2F53 Series		
Chance Transformer							
General Electric Crossarm (L)		9F80	9F80		9F80		
General Electric Transformer	9F78A			9F78A		9F78A	
Joslyn(valve) Crossarm	J9237-Q6	J9237-Q2	J9237-Q2/R	J9237-Q6	J9237-Q2/R	J9267-Q6	J9267-Q2
(valve) Crossarm (L)		J9237-Q2/B	J9237-Q2/B/R		J9237-Q2/B/R		J9267-Q2/B
(valve) Transformer	J9238-1Q			J9238-1Q		J9268-1Q	
Kearney Crossarm		123502	123511		123512		
Kearney Transformer	294072			294073		294074	
McGraw-Edison Crossarm (L)		AFS301B Series	AFS301C Series		AFS301C Series		AFS300D Series
McGraw-Edison Transformer	AFS800M010			AFS800M010		AFS800M018	

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

*These cutouts have open links and must not be used where fault currents are high or for sectionalizing.

(L) Indicates loadbreak type is available.

by
October 1980

by - Deadend, Automatic and Formed Type

Fargo	Reliable	Conductor Size Cu	CWC
GD-515	-	-	4A
GD-513	-	-	6A
GD-512	-	-	8A
GD-515	27LD	2 x 3	-
GD-512	41LD	4	-
GD-511	61LD	6	-

ACSR

*Fargo	GD-400 Series
*Reliable	7650 Series
#*Preformed	OHDE-9534 thru 9540 OHDE-4577 Use with thimble clevis PSTC-5247

May also be used with a spool insulator (Item cm) and appropriate clevis for neutral and secondary applications.

Aluminum Alloy
(6201 and 5005)

Fargo	GD-A Series
Reliable	AL Series

*For use on distribution only.

Conditional List
by
July 1980

by - Deadends, automatic and formed type

FORMED TYPE

Manufacturer	Meeting No. and Date	Conditions
Preformed Line Products		
AWAC 4 - 4/3 DG-4560 AWAC 2 - 4/3 DG-4562 AWAC 1/0 - 4/3 DG-4565	993 6/8/72	To obtain experience.

AUTOMATIC TYPE

Reliable		
AWAC 4-4/3 5201 AWAC 2-4/3 5202 AWAC 1/0-4/3 5204	1026 9/27/73 1035 2/21/74	To obtain experience.
Fargo		
AWAC 4-4/3 GDA-235 AWAC 2-4/3 GDA-240 AWAC 1/0-4/3 GDA-245	1087 4/1/76	To obtain experience.

cg - Switch, air, three-pole, group-operated
NEMA standard switches for station and line structures

Manufacturer	Acceptable Mounting on Structure	Titling Ins. Type	kV	Vertical Break Type	kV	Side Break Type	kV	Center Break Type	kV	Double Break Type	kV
Gould-Brown Boveri (ITE)	Horizontal	3ST	15-34.5	TTR6	15-161						
Johnson	Horizontal			VIP	15-230	LS	15-69	M	15-230		
Joslyn	Horizontal			RF-2(VL)	15-230	RB-1(VL)	15-25				
(Hi-Voltage)	Horizontal					RB-1*	15-115				
Kearney	Horizontal	NE-2	15-34.5	AR 60-P	15-69						
MEMCO	Horizontal	AgF	15-69	EA	15-345			EE	69-230		
	Horizontal	AgC	15-69								
H. K. Porter (Delta-Star)	Horizontal			MK-40	15-69	PMB-40A	15-69	LPC	69-230		
Siemens-Allis	Horizontal			TA(VL)	15-69	SSB-T	15-69	CCB	115-230		
								CBL-2	115-230		

(L) Means gas or solid material full-load interrupters are accepted and available.
(VL) Means vacuum full-load interrupters are accepted and available.
* These switches may be purchased with reduced voltage vacuum interrupters and may be applied for loop sectionalizing duty when peak recovery voltage does not exceed 25 kV.
NOTE: Vertical phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group-operated
NEMA standard switches for station and line structures

Manufacturer	Acceptable Mounting on Structures	Tilting Ins. Type	kV	Vertical Break Type	kV	Side Break Type	kV	Center Break Type	kV	Double Break Type	kV
Powerdyne (Kearney)	Horizontal							V2-V4	34.5-230		
ANIXTER Royal	Phase over Phase					RG-63(L)	15-69				
	Horizontal					RSL-L(L)	15-69				
S & C	Horizontal			Alduti(L)	15-34.5	Alduti(L)	15-25			Alduti(L)	34.5-46
	Phase over phase			Alduti(L)	15-25	Alduti(L)	15-25			Alduti(L)	34.5-46
	Vertical			Alduti(L)*	15-34.5	Alduti(L)	15-25			Alduti(L)*	34.5-46
Southern States	Horizontal			WAG	15-230	57K	15-69				
Turner	Phase over phase					(1D,2D,3D)(VL)	15-161				
	Horizontal					1D(VL)	15-161				
USCO	Horizontal			AGT(VL)**	15-230	GSH-4(VL)	15-138	AGCH**	15-345		
	Horizontal							AGCH-V**	34.5-230		
	Phase over phase					GSH-4(VL)	15-138	GCH	15-23		

(L) Means gas or solid material full-load interrupters are accepted and available.
(VL) Means vacuum full-load interrupters are accepted and available.
* These switches, except 34.5 kV Alduti vertical break, are available and accepted in combination with the S & C Type SMD substation fuse cutouts listed on page af-3.
** Also available in bronze in some ratings.

NOTE: Vertical phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group-operated

(Not Suitable for Substation Use)

Manufacturer	Acceptable Mounting	Vertical Break Type	kV	Side Break Type	kV	Center Break Type	kV
Chance	Horizontal			D2(L)*	15-34.5		
	Phase-over-phase			D2(L)*	15-34.5		
K-P-F	Horizontal	SV-202	23	A202-A208	15-110		
	Phase-over-phase			A202	15-23		
	Phase-over-phase			W202	15-23		
	Phase-over-phase			MD202	15-23		
Powerdyne (Kearney)	Horizontal			A	15-23	V2	15-23
	Phase-over-phase			A	15-23	V2	15-23

*Also available in bronze in some ratings.

(L) Means gas or solid material full-load interrupters are accepted and available.

(VL) Means vacuum full-load interrupters are accepted and available.

NOTE: Phase-over-phase mounted switches are not acceptable above 25 kV class unless equipped with full-load interrupters. Switches of 15 kV and 25 kV classes with individual phases mounted on wood crossarms or poles must be supplied with insulated interphase and control rods.

cg - Switch, air, three-pole, group-operated (Factory Preassembled)

Manufacturer	Acceptable Mounting on Structures	Vertical Break Type kV	Side Break Type kV
Chance	Horizontal (A)		D4,D5(L)15-27
	Phase over phase (A)		D4,D5(L)15-27
S & C	Horizontal (A)		Alduti(L)15-25
	Vertical (A)		Alduti(L)15-25
	Phase over phase (B)	Alduti(L) 34.5 (200 kV BIL)#	
	Vertical (B)	Alduti(L) 34.5 (200 kV BIL)#	

(L) Means gas or solid material full-load interrupters are accepted and available.

Accepted for transmission use only, provided the steel crossarm base is grounded with an adequate grounding connector.

(A) Not suitable for substation use.

(B) NEMA standard switches for station and line structures.

NOTE: Switches with factory-assembled crossarm type bases must have nonconducting crossarm type bases, nonconducting braces, and insulated interphase and control rods, except as otherwise noted.

cj - Pole Ground Wire

Soft annealed iron, BB Grade, Class C galvanizing
(For pole protection only)

Manufacturer	Size 1.15 Ohms/1000 ft., max.
Bethlehem Steel	3-wire, 5/16 inch
Indiana Steel and Wire	3-wire, 5/16 inch
Southwire	3-wire, 5/16 inch
U. S. Steel	3-wire, 5/16 inch

Copper, soft annealed solid
ASTM Specification B3

Manufacturer

(See page av-2)

Aluminum (for above ground use only)
Three-quarter hard-drawn EC grade

Manufacturer

(See page av-1)

Aluminum Alloy (for above ground use only)

Manufacturer	Type
ALCAN	6201
ALCOA	6201
American Electrical	6201
Kaiser	6201
Reynolds	5005
Southwire	6201, 5005

Copper-Clad Steel, Annealed 40 percent Conductivity

Manufacturer	Size
Copperweld*	No. 6

*Not for use on distribution when neutral is larger than #1/0 ACSR.

ck

July 1980

ck - Clamp, anchor rod bonding

For Standard and Drive Type Rods

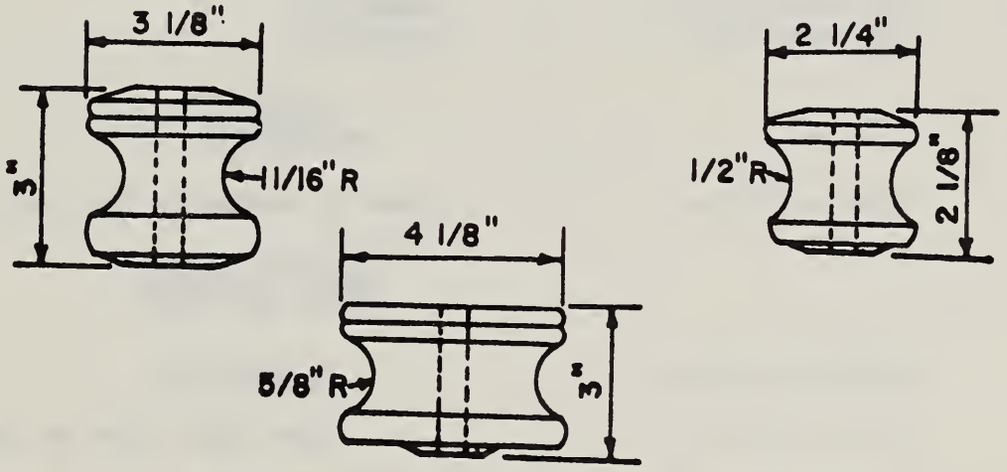
Diam. of Rod	Type of Eye	5/8"	3/4"	1"
C & R Products	Single	CRBC-1	CRBC-1	CRBC-1
	Twin	CRBC-2	CRBC-2	CRBC-2
	Triple	-	CRBC-3	CRBC-3
Chance	Single	G5060	G5060	G5060
	Twin	G5061	G5061	G5061
	Triple	-	G5063	G5063
Dixie	Single	D3143	D3143	D3143
	Twin	-	D3144	D3144
	Triple	-	D3145	D3145
Joslyn	Single	3230	3230	3230
	Twin	-	3231	3231
	Triple	-	3233	3233
Kortick	Single	K3147	K3147	-
	Twin	-	K3148	K3148
	Triple	-	K3149	K3149
McGraw-Edison	Single	DA1B1	DA1B1	DA1B1
	Twin	DA2B1	DA2B1	DA2B1
Utilities Serv.	Single	CG5060	CG5060	-
	Twin	-	CG5061	CG5061
	Triple	-	CG5063	CG5063

For Power Installed Screw Anchors

C & R Products	Single	CRBC-4	CRBC-5	-
Chance	Single	G5067	G5068	-
Joslyn	Single	PIBC-4	PIBC-5	-

cm - Insulator, Spool

Type:	Secondary (Wet Process)		Service	
			Wet Process	Dry Process
Groove Diameter:	1-3/4"	3"	1-3/8"	1-3/8"
Chance	C909-1032	C909-1034	C909-1031	0606
Hughes	2102	-	-	-
Gould-Brown Boveri (ITE)	2012	2026	2011	-
Joslyn	J151	J0101	J150	J100
Kortick	K516	K522	K513	K514
McGraw-Edison	DE4S3	DE5S1	DE2S2	DE2S1
Porcelain Prod. (Knox)	5101	5119	5107	5207
Universal	1082	-	-	-
Utilities Service	205	31221	208	207



cp
July 1980

cp - Deadend, Compression Type

ACSR

Conductor Size	Alcoa	AMP	Anderson/Sq. D
1/0	Order by		VCD-50R
2/0	Conductor		thru
3/0	Size and		VCD-61R
4/0	Stranding		"
266.8 kcmil 26/7	2-piece		
336.4 kcmil 26/7	alloy		
477 kcmil 26/7	compression	Type DE (Order	
556.5 kcmil 26/7	"	by Conductor	
795 kcmil 26/7	"	Size and	VCD-835-4RM
954 kcmil 54/7	"	Stranding)	VCD-835-4RM

Conductor Size	Burndy	Fargo(Alcan)	Kearney	Somerset/Homac
1/0	Type Y-W		104000	Order by
2/0	"		thru	Conductor
3/0	"		104000-03	Size and
4/0	"		"	Stranding
266.8 kcmil 26/7	"	SEDA-1109	104000-05	"
336.4 kcmil 26/7	Type YTW	SEDA-1309	thru	"
477 kcmil 26/7	"	SEDA-1809	104000-14	"
556.5 kcmil 26/7	"	SEDA-2209	"	"
795 kcmil 26/7	"	SEDA-3309		
954 kcmil 54/7	"	SEDA-4121		

ACSR
Adjustable

Somerset/Homac	Order by conductor size and stranding.

Aluminum Alloy
(6201 and 5005)

Conductor Size:	4 thru 4/0
Anderson/Sq. D	Type VCD, Order by conductor size.

Copper

Conductor Size:	2 x 3	4	6
National Tel. Supply	71-258/3X	71-204-P	71-162-J

Copperweld-Copper

Conductor Size:	6A	8A
National Tel. Supply	71-6A-P	71-8A-P

cy - Splice, compression

1-piece splice for ACSR

Manufacturer	Meeting No. and Date	Conditions
*ALCOA "Jiffy Joint"	704 11/10/60	To obtain experience.

1-piece splice for AWAC

Manufacturer	Meeting No. and Date	Conditions
Burndy AWAC 4-4/3 YDS7M10T AWAC 2-4/3 YDS7M9T AWAC 1/0-4/3 YDS7M7T	1050 9/19/74	To obtain experience.

*Satisfactory for use with 6201 and 5005 all aluminum alloy conductor through 4/0 and 19 strand conductors of sizes 26,800 CM and 477,000 CM.

cz
October 1980

cz - Splice for Steel Strand (Overhead Ground Wire)

Compression

Single Sleeve Only

	High strength steel		Aluminum clad steel		
	3/8"	7/16"	7 No. 9 AWG	7 No. 8 AWG	7 No. 7 AWG
Alcoa	4012.377	4014.453			
Burndy	YTS375E	YTS438E	YDS7M9T	YDS7M8T	YDS7M7T
Fargo (Alcan)	81390	81468	81375	81421	81468
Kearney	HR-3/8-3-7S				
National Tel. Supply	5-7/120G92	5-7/145J22			
Somerset/Homac	29714				

Steel and Aluminum Sleeves

Alcoa	4720.12	4727.14
Somerset/Homac	29714 & 28414 (Two piece)	

Automatic

Reliable	5002	5003

Bolted Type

Electroline	GD-537	

Formed Type

Helical Line Products	HS-310-3/8"	HS-311-7/16"

fc - Capacitors, shunt
12470/7200 volts

Manufacturer	Meeting No. and Date	Conditions
General Electric		
Film/Foil Type, 1 bushing 52L226RC (25 kvar) 51L226RC (50 kvar) 54L226RC (100 kvar) 54L526RC (150 kvar) 58L126RC (200 kvar) 59L226RC (300 kvar)	1192 8/7/80	To obtain experience
Film/Foil Type, 2 bushing 52L206RC (25 kvar) 51L206RC (50 kvar) 54L206RC (100 kvar) 54L506RC (150 kvar) 58L106RC (200 kvar) 59L206RC (300 kvar)	1192 8/7/80	To obtain experience
Film/Foil Type, 3 bushing 59L611RC (300 kvar)	1192 8/7/80	To obtain experience

fc - Capacitors, shunt
24900/14400 volts

Manufacturer	Meeting No. and Date	Conditions
McGraw-Edison		
All film type, 1 bushing CEP138B4 (100 kvar) CEP137B4 (150 kvar) CEP142B4 (200 kvar)	1109 3/3/77	To obtain experience
CEP162B4 (300 kvar)	1186 (5/8/80)	Same as above
Sangamo		
Film type, 1 bushing 346365 (50 kvar) 346016 (100 kvar) 346115 (150 kvar) 346676 (200 kvar)	1135 3/23/78	Same as above
Film type, 2 bushing 346318 (50 kvar) 346052 (100 kvar) 346150 (150 kvar) 346615 (200 kvar)	1135 3/23/78	Same as above
Westinghouse		
Film type, 1 bushing 1N02050A31 (50 kvar) 1N02100A31 (100 kvar) 1N02150A31 (150 kvar) 1N02200A31 (200 kvar)	1116 6/9/77	Same as above
Film type, 3 bushing 3Ø 1N02303A29 (300 kvar) 1N02403A29 (400 kvar)		
General Electric		
Film/Foil Type, 1 bushing 51L252RC (50 kvar) 54L252RC (100 kvar) 54L552RC (150 kvar) 58L154RC (200 kvar)	1192 8/7/80	Same as above

fd
July 1980

fd - Hangers, capacitor

Crossarm Mounting

	1 unit	2 units	3 or 4 units
General Electric	39F41	39F53	39F54
McGraw-Edison	CH1A1	CH2A2	CH4A1
Sangamo	94346	94345	94347
Westinghouse	85B397G01	791C644G01	791C644G02

Pole Mounting

	Single Phase	Three Phase	
		In Line	Cluster
Aluma-Form	CR-3* thru CR-6*		3-CR-3/4*
Joslyn	J6744, J6744A		
General Electric	39F83G1	39F86G1	
Sangamo	97650		
Westinghouse	278C928G01 (3 units) 278C928G02 (6 units)	(1ø units) 278C928G01 (3 units) 278C928G02 (6 units) 278C928G03 (9 units) (3ø units) 279C310G03 (1 unit) 279C310G04 (2 units) 279C310G05 (3 units) 279C310G01 (4 units) 279C310G06 (5 units)	

* Available with oil switch mounting bracket.

fj - Bracket, extension

(For use in mounting oil circuit reclosers or sectionalizers)
See Drawing VM3-10A

	Through Bolt Type	Band Type
Aluma-Form	TBRSM-1, TB2M1-6*	RSM-1
Joslyn	J2357M	
McGraw-Edison	DR2E3	

*For mounting double lug reclosers.

fk - Bracket, oil circuit recloser or sectionalizer

(For cluster mounting of three oil circuit reclosers on pole)

Aluma-Form	RSM-3
*McGraw-Edison	DT8C1
Turner	695-3

*Suitable for 14.4 and heavy duty 7.2 kV.

fl - Rack, primary metering

(For cluster mounting of primary metering equipment on pole)

Aluma-Form	PMM Series
Turner	3CT-PT

fm
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fm - Bracket, Arrester and Pothead Extension

For Distribution Arrester and Cutout - Pole Mounting

Manufacturer		Single Phase	Three Phase
Aluma-Form		1HCA-18 Series	R3CA-48
Anderson/ Square D	12.5/7.2 kV	COB-E-120-TGL	
	24.9/14.4 kV	COB-E-180-TGL	
Bethea/National	12.5/7.2 kV	VIB3-12F-GC	
	24.9/14.4 kV	VIB3-18F-GC	
Chance		C653-1038	C653-1056
Continental		IACB-18-5-LGE	
Dixie	12.5/7.2 kV	D-1580	
Flagg (MIF)	12.5/7.2 kV	PA613H	
	24.9/14.4 kV	PA619H	
Lapp	12.5/7.2 kV	304036-G	
	24.9/14.4 kV	304038-G	
McGraw-Edison		DC34B3	
Power Line Hardware	12.5/7.2 kV	CA-12-3GL	
Shakespeare		892-18	670-40

For two distribution arresters in parallel or one arrester and cutout - crossarm mounted

Manufacturer	Catalog No.
McGraw-Edison	DM23B2

For Intermediate Arrester Mounting

Manufacturer	Single Phase	Three Phase
Aluma-Form	WBMA-1	R3CSA-48

sb - Switch, disconnect (single-pole, hook-operated station class)

NEMA standard switches for station or line structure use where single-pole switching is permissible

Manufacturer	Type	Voltage Ratings	System Voltages Line-to-Line
ANIXTER Royal	BT	15 thru 69 kV	12.5 thru 69 kV
Bridges	EH	15 thru 69 kV	12.5 thru 69 kV
	EHL(L)	15 thru 69 kV	12.5 thru 69 kV
	HA	15 thru 69 kV	12.5 thru 69 kV
Gould-Brown Boveri (ITE)	HPL	15 thru 69 kV	12.5 thru 69 kV
	DS(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
Hi-Voltage (Joslyn)	HU	15 thru 69 kV	12.5 thru 69 kV
	HI	15 thru 69 kV	12.5 thru 69 kV
Johnson	HPT	15 thru 69 kV	12.5 thru 69 kV
Kearney	M-72(PL)	15 thru 69 kV	12.5 thru 69 kV
McGraw-Edison	D2(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
MEMCO	STV	15 thru 69 kV	12.5 thru 69 kV
	STU	15 thru 69 kV	12.5 thru 69 kV
Morgan	DHS (PL included in 15 kV)	15 thru 69 kV	12.5 thru 69 kV
H. K. Porter (Delta-Star)	B-2M	15 thru 69 kV	12.5 thru 69 kV
	EV(PL)	15 thru 34.5 kV	12.5 thru 34.5 kV
S & C	LBD(PL)	15 thru 34.5 kV	12.5 thru 34.5 kV
	Alduti(L)	15 and 25 kV	12.5 thru 24.9 kV
Siemens-Allis	HA	15 thru 69 kV	12.5 thru 69 kV
	HS(PL)	15 and 25 kV	12.5 thru 24.9 kV

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available.

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sb - Switch, disconnect (single-pole, hook-operated station class)

NEMA standard switches for station or line structure use where single-pole switching is permissible

Manufacturer	Type	Voltage Ratings	System Voltages Line-to-Line
Southern States	PBO	15 thru 69 kV	12.5 thru 69 kV
	*PBN	15 thru 23 kV	12.5, 13.2, 24.9 kV
USCO	HH(PL)	15 thru 69 kV	12.5 thru 69 kV

(L) Means solid material load interrupters are available and accepted.

(LV) Means vacuum interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available.

* With steel base only.

sb - Switch, disconnect (single-pole, hook-operated distribution class)*

For distribution line use where power class insulation is not required and single-phase switching is permissible.

(Not suitable for substation use)

Manufacturer	Type	Voltage Rating	System Voltage Line-to-Line
ANIXTER Royal	BLT(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
Chance	M3(PL)	15 kV	12.5, 13.2 kV
Gould-Brown Boveri (ITE)	DS(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
Kearney	D-73(PL)	15 and 23 kV	12.5, 13.2, 24.9 kV
McGraw-Edison	D2(PL)	15 and 25 kV	12.5, 13.2, 24.9 kV
Morgan	DHS (PL included in 15 kV)	15 and 23 kV	12.5, 13.2, 24.9 kV
H. K. Porter	EV(PL)	15 kV	12.5 kV
S & C	LBD(PL)	15 and 25 kV	12,5, 13,2, 24.9 kV
Siemens-Allis	HD(PL)	15 and 25 kV	12.5 thru 24.9 kV
Southern States	PD-2	15 and 23 kV	12.5, 13.2, 24.9 kV
	PDJ-2(PL)	15 and 23 kV	12,5, 13.2, 24.9 kV

NOTE: Switches on this page must be furnished with four bolts for double crossarm mounting.

(L) Means solid material load interrupters are available and accepted.

(PL) Means hooks for portable load interrupters are available.

(LV) Means vacuum interrupters are available and accepted.

*Steel bases only.

sc - Regulators, Voltage
12.5/7.2 kV
13.2/7.62 kV

Applicable Specification: REA "Specification for Substation Regulators," S-2

Type	Size	Description
	General Electric	
ML-32	19.1 - 509 kVA	(SL) Single phase - step type
MLT	500 - 1000 kVA	(S) Three phase - step type
VML-32	500 - 833 kVA	(S) Single phase - vacuum step type
VMLT-32	1200 - 2800 kVA	(S) Three phase - vacuum step type
	McGraw-Edison	
RSAA	19.1 - 500 kVA	(SL) Single phase - step type
RAB	50 amp.	(L) Single phase - step type (Auto-Booster)
	Siemens-Allis	
JFR	38.1 - 667 kVA	(SL) Single phase - step type
LFR	50 amp.	(L) Single phase - step type
	Westinghouse	
UTS, UTT	167 - 1000 kVA	(S) Three phase - step type

(L) Indicates line use
(S) Indicates substation use

sd - Current Transformers
Outdoor Types

Manufacturer	.6 kV	15 kV	25 kV	34.5 kV	69 kV
Associated Engineering	GT HA WEO	BB-15 LG-15	BB-25 LG-25 COF	LG-34.5 COF	
Astra	AA TFW AB AD				
Duncan	DCBW DCCW DCAB				
General Electric	JCR-0 JCW-0 JAK-0 JAD-0	JKW-5 JCK-5	JKW-6 JKW-150 KG-150	JKW-7 JKW-200 KG-200	JKW-350 KG-350
Sangamo	B6 Type	SMC-150			
Westinghouse	CSF/CMS CMF CLC/CLE	CTOM-110 CTOM-15	ACT-150 CCO-150	ACT-200	ACT-350

NOTE: The transformer types listed above are accepted in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

Conditional List
sd
October 1980

sd - Current Transformers
Outdoor Types

Manufacturer	Meeting No. and Date	Conditions
Electromagnetic Ind.		
Type IK-E, 46-69 kV	971 (7/15/71)	To obtain experience.
Type UMCT, 0.6 kV	981	
Type UCT, 0.6 kV	12/16/71	
Type C03-110, 15 kV	1076	
Type C03-150, 25 kV	10/30/75	
Type C03-200, 34.5 kV		

se - Voltage Transformers

Outdoor Types

Manufacturer	.6kV	1.2kV	15kV	25kV	34.5kV	69kV
Associated Engineering	CL TL		PTT-150 SPOF-100 PTT-110	PTT-150 SPOF-150	POF-200	
Duncan	DVE-6 DVF-6					
General Electric	JVA-0 JVP-0		JVW-5 JVW-110	JVW-6 ET-150 JVT-150	JVW-7 ET-200 JVT-200	ET-350 JVT-350
Sangamo	T6A T7		SMP-150			
Westinghouse	PPM		PTOM-110M PTOM-110	PTOM-150 APT-150	APT-200	APT-350 LPT-350

NOTE: The transformer types listed above are acceptable in all standard ratios. Insulation class, voltages, ratios and other necessary information should be specified when ordering.

Conditional List
se
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se - Voltage transformers

Outdoor Types

Manufacturer	Meeting No. & Date	Conditions
Astra		
Type DB, 0.6 kV	1087	To obtain experience.
Type DA, 0.6 kV	4/1/76	
Electromagnetic Industries		
Type ZOF-E, 46 kV	971	To obtain experience.
Type EOF-E, 46 kV	7/15/71	
Type UT-E, 46-69 kV		
Type PO4-110, 15 kV	1076	
Type PO4-150, 25 kV	10/30/75	
Type PO4-200, 34.5 kV		
Type U-450, 0.6 kV	1080(12/23/75)	

sj - Switches, oil circuit recloser by-pass

Manufacturer	15 kV for Use on 12.5/7.2 kV Systems	27 kV for Use on 24.9/14.4 kV Systems	Current Rating Amperes

(NO PRESENT LISTING)

sk
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sk - Switch, regulator by-pass - disconnect
For outdoor use

Manufacturer	15 kV for use on 12.5/7.2 kV systems	27 kV for use on 24.9/14.4 kV systems	Current Rating Amperes
Kearney	HB-65	HB-65	600
S & C Electric	XL	XL	600
Siemens-Allis	HR	HR	600
Southern States	BR	BR	400, 600

NOTE: All switches should be furnished with NEMA standard insulators and with 110 kV BIL rating (15 kV systems) or 150 kV BIL ratings (25 kV systems) for station use.

sk - Switch, regulator by-pass - disconnect
For outdoor use

Manufacturer	Meeting No. and Date	Conditions
McGraw-Edison		
Type B, 15 kV, 400 amperes 110 kV BIL for station use 95 kV BIL for line use	1035 2/21/74	To obtain experience.

NOTE: All switches should be furnished with NEMA standard insulators and with 110 kV BIL rating for station use.

s1 - Switch, Combination Power Fuse and Disconnect

(Used with an additional disconnect switch to by-pass oil circuit reclosers at substations.)

Manufacturer	15 kV for use on 7.2/12.5 systems	27 kV for use on 14.4/24.9 systems
Hi Voltage	RFH	
Kearney	MHX	
McGraw-Edison	FC2	
S & C Electric	SMD/LBD XS/LBD	SMD/LBD
Southern States	SF	
ANIXTER Royal	TUF	

Note: All switches and cutouts should be furnished with NEMA standard insulators.

sr - Steel for Substation Grounding, Copper-Clad or Galvanized

(See page av-2 for copper grounding conductor)

Manufacturer	Meeting No. and Date	Conditions
Copperweld Steel 40% conductivity DSA Copperweld Strand in sizes: 1/2" (7 No. 6 AWG) 9/16" (7 No. 5 AWG) 5/8" (7 No. 4 AWG) 13/16" (19 No. 6 AWG) 7/8" (19 No. 5 AWG)	954 10/29/70	1. To obtain experience. 2. When used in soil with resistivity of 25 ohm-meters (2500 ohms per centimeter cube) or less, cathodic protection must be incorporated into the grounding design.
Indiana Steel & Wire Steel strand, BB grade, Class C galvanized 5/8" (19 wire) 1/2" (7 wire) 9/16" (7 wire) 7/16" (7 wire)	1004 11/16/72 1133 2/16/78	1. To obtain experience. 2. When used in soil with resistivity of 25 ohm-meters (2500 ohms per centimeter cube) or less, cathodic protection must be incorporated into the grounding design.
Bethlehem Steel 7/16" and 1/2" steel strand, BB grade, Class C galvanized	1015 4/26/73	1. To obtain experience. 2. When used in soil with resistivity of 25 ohm-meters (2500 ohms per centimeter cube) or less, cathodic protection must be incorporated into the grounding design.

vx - Cross brace assembly, 3-3/8" x 5-3/8"
with hardware & fittings (Dwg. TM-110, REA Spec. T-7)

Manufacturer	Catalog No.
American Crossarm & Conduit	
Item 1-vx	1100-1
Item 2-vx	1100-2
Hughes Bros.	
Item 1-vx	1042-1
Item 2-vx	1042-2
Brooks Lumber	
Item 1-vx	X6685-1
Item 2-vx	X6685-2
Joslyn	
Item 1-vx	1-J6046
Item 2-vx	2-J6046
United (Ky. AEC)	
Item 1-vx	SW1042-1
Item 2-vx	SW1042-2
Niedermeyer-Martin	
Item 1-vx	N-6714-1
Item 2-vx	N-6714-2
Cascadian	
Item 1-vx	CCC-67-1
Item 2-vx	CCC-67-2

Cross Brace Assembly, 3-5/8" x 7-1/2" Min.
with hardware and fittings.

Applicable Specification: T-8
Drawing: TM-110A

Manufacturer	Catalog No.
Brooks	X-6695
Hughes	2061
American Crossarm & Conduit	1200
Joslyn	J6048
Niedermeyer-Martin	N-6721

zz - Poles

Applicable preservatives: Creosote, pentachlorophenol-petroleum and waterborne salts (ACA and CCA)

(Firms listed on pages zz-1 through zz-7 are also qualified to treat crossarms. Crossarms should be fabricated at one of the plants listed on page g-1 or g-2.)

Pressure Treatment

	Insured Warranted	Independently Inspected
Alabama Wood Treating Corp.	-	Mobile, Ala.
American Creosote Works, Inc.	-	Jackson, Tenn. Louisville, Miss. Pensacola, Fla.
American Crossarm & Conduit Co.	-	Chehalis, Wash.
Arkwood	-	Omaha, Arkansas
Atlantic Wood Industries, Inc.	-	Portsmouth, Va. Savannah, Ga. Vidalia, Ga. Fruitland, Md.
Baldwin Pole & Piling Co.	-	Bay Minette, Ala.
J. H. Baxter & Co.	Eugene, Ore.	Eugene, Ore. Long Beach, Calif. The Dalles, Ore. Quendall, Wash. Weed, Calif. Laramie, Wyo.
Benton Creosoting Co. (Kennedy Saw Mills)	-	Benton, La.
Broderick Wood Products Co.	-	Denver, Colo.
Brown Wood Preserving Co.	-	Brownville, Ala. Louisville, Ky.
Burke-Parsons-Bowlby Corp.	-	Leland, N. C.
Cascade Pole Co.	- -	Tacoma, Wash. Olympia, Wash.

zz - Poles

Pressure Treatment

	Insured Warranted	Independently Inspected
Cowboy Timber Treating, Inc.	-	Manderson, Wyo.
Colfax Creosoting Co.	-	Pineville, La.
Conroe Creosoting Co.	-	Conroe, Texas
Crown Zellerbach Corp.	-	Gulfport, Miss. Mobile, Ala. Urania, La. Sallisaw, Okla.
Dant & Russell, Inc.	-	North Plains, Ore.
Davis Timber Company, Inc.	-	Hattiesburg, Miss.
Dierks Div., Weyerhaeuser Co.	-	DeQueen, Ark.
El Dorado Pole & Piling Co., Inc.	-	El Dorado, Ark.
Eppinger and Russell	-	Chesapeake, Va.
Escambia Treating Co.	-	Brunswick, Ga. Pensacola, Fla. Camilla, Ga.
Fernwood Industries	-	Fernwood, Miss.
Fordyce Wood Preservers, Inc.	-	Fordyce, Ark.
Garland Creosoting Company	-	Longview, Texas
Hart Creosoting Company	-	Jasper, Texas
Edward Hines Lumber Company	-	Mena, Arkansas
Hoosier Treating Company	-	Gosport, Ind.
Huxford Pole & Timber Co., Inc.	-	Huxford, Ala.

zz - Poles

Pressure Treatment

	Insured Warranted	Independently Inspected
Idaho Pole Company	Bozeman, Mont.	Bozeman, Mont.
International Paper Co. Wood Preserving Division	-	De Ridder, La. Joplin, Mo. Longview, Wash. Navasota, Texas
	Wiggins, Miss.	*Wiggins, Miss.
Jasper Creosoting Co.	-	Jasper, Texas
Joslyn Mfg. & Supply Co.	-	Minneapolis, Minn. Richton, Miss.
Kerr-McGee Chemical Corp. Forest Products Div.		Meridian, Miss. Columbus, Miss. Texarkana, Texas
Koppers Co. Inc.	-	Carbondale, Ill.
		*Denver, Colo. Florence, S. C. Gainesville, Fla. Grenada, Miss. Houston, Texas *Montgomery, Ala. N. Little Rock, Ark. *Oroville, Cal. Salisbury, Md. Richmond, Va. Galesburg, Ill. Nashua, N. H.
Lake States Wood Preserving, Inc.	Munising, Mich.	Munising, Mich.

* Cellon process also accepted.

zz - Poles

Pressure Treatment

	Insured Warranted	Independently Inspected
Langdale Company	Sweetwater, Tenn. Valdosta, Ga.	Sweetwater, Tenn. Valdosta, Ga.
Lockhart Lumber Company	-	Lockhart, Ala.
Lufkin Creosoting Co.	-	Lufkin, Texas
Madera Treating Div., B. J. Carney & Co.	-	Madera, Cal.
McCormick & Baxter Creosoting Co.	-	*Portland, Ore. *Stockton, Cal.
L. D. McFarland Co.	Eugene, Ore.	Eugene, Ore.
Marion Pressure Treating Co.	-	Marion, La.
William C. Meredith Co.	-	Atlanta, Ga.
T. R. Miller Mill Co., Inc.	-	Brewton, Ala.
Madisonville Creosote Works	-	Madisonville, La.
Mississippi Wood Preserving Co.	-	Brookhaven, Miss.
Montana Pole & Treating Plant	-	Butte, Mont.
Niedermeyer-Martin Co. (Pacific Wood Treating Corp.)	-	Ridgefield, Wash.
Oeser Cedar Company	-	Bellingham, Wash.

* Cellon process also accepted.

PART II

Underground Distribution Equipment

The realm of underground distribution has made quite significant advances in the past few years. Due to these advances and the increasing feasibility of underground rural distribution, most REA borrowers have placed some distribution equipment underground, are presently planning to, or are anticipating doing so in the future. If borrowers are to obtain reliable and economical underground systems, approved standards for construction and equipment must be observed.

Underground equipment considered suitable is being included in the "List of Materials Acceptable for Use on Systems of REA Electrification Borrowers." Specifications have been written and are available on much of this equipment. It must be realized that very little operating experience is available on this type equipment. Therefore, much of the underground equipment will be listed as "Conditional" until such experience is obtained that will warrant removing the "Conditional" listing. Listing of an item as "Conditional" does not mean that the item is inferior. Conditional means that service experience is desired so the item can be properly evaluated and demonstrates satisfactory performance before consideration for final acceptance.

Any comments or suggestions regarding the use or operation of the listed underground equipment will be welcome.

U ae - Surge Arresters, Distribution
for Underground System Pole Risers
(Lightning Arresters)

Manufacturer	Arrester Class	Arrester Type	Ratings - kV
General Electric	Distribution, heavy duty	Alugard	9, 10, 18
	Intermediate	Alugard	9, 10, 18
Joslyn	Distribution, normal duty	Q	9/10, 18
	Distribution, heavy duty	J	9/10, 18
	Intermediate*	RS	9, 10, 18
Kearney	Distribution, heavy duty	Unigap	9, 10, 18
McGraw-Edison	Distribution, normal duty	ES	9/10, 18
	Distribution, heavy duty	EL	9, 10, 18
Ohio Brass	Distribution, normal duty	DA-III	9/10, 18
	Distribution, heavy duty	DA-IV	9, 10, 18
	Intermediate	GP	18
Westinghouse	Distribution, normal duty	LV	9/10, 18
	Distribution, heavy duty	LVBB	9/10, 18

*Has intermediate class arrester characteristics but does not have intermediate class venting capability.

NOTE: The arresters listed on this page may be used singly or in parallel, but must be applied in accordance with paragraph VI.A., in REA Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.

U ae - Arresters, Surge
(For underground system pole risers or pad-mounted equipment)

Manufacturer	Meeting No. and Date	Conditions
RTE		
Metal oxide M.O.V.E. 9 & 18 kV	1185 4/24/80	To obtain experience
General Electric		
Metal oxide, Tranquell UD 9, 10, 18 kV	1185 4/24/80	Same as above
McGraw-Edison		
Metal Oxide, RP2 9, 10, 18	1193 8/21/80	Same as above

U an - Transformers, distribution pad-mounted, dead-front

(For underground application)

Applicable Specifications: "REA Specifications for Pad-Mounted Transformers," U-5

Manufacturer	Single Phase	Three-Phase
Central Moloney (2,4)	"REA-LP" 25-167 kVA	
Chance (2)	"Turf Hugger-R" 15-167-kVA	"Turf Hugger-R" 75-500 kVA
Dowzer (3,4)	"METRI-PAD" 25-167 kVA	"PM3W-R" 75-500 kVA
ERMCO (1) (4,6) (2,4)	"Trimline" 10-50 kVA "Low-Profile" 10-50 kVA "Low-Profile" 75 kVA	
General Electric (2,4)	"Mini-Pad III - REA" 10-167 kVA	"Compad II - REA" 75-2500 kVA
Howard (2,4)	"HiPad REA" 10-167 kVA	"HiPad 3 REA" 45-2500 kVA
Kuhlman (2,4)	"Lo-Pak ALR" 25-167 kVA	
McGraw-Edison (2,4)	Series 20/30 REA 25-167 kVA	"REA Pad-Mount" 75-2500 kVA
NECO (2)	HMM-R, 10-50 kVA SP-R, 75-167 kVA	TP-R, 45-1000 kVA
H. K. Porter (2,4) (Delta-Star)	"Low Profile U 5-R" 25-167 kVA	"Porter U5-R3" 225-2500 kVA
RTE (2,4)	"REA Shrubline" 15-167 kVA	"REA Terra-Tran" 45-2500 kVA
Standard (3,4,5)		"Mini-Pad RE010" 75-300 kVA "Stan-Pad RE010" 500-1500 kVA
United (Ky. AEC) (2,4)	"Pad-Mount" 15-75 kVA	

(1) 7.2/12.5 and 7.6/13.2 kV
(2) 7.2/12.5, 7.6/13.2 and 14.4/24.9 kV
(3) 7.2/12.5 and 7.6/13.2 kV (conditional listing for 14.4/24.9 kV)
(4) Dual voltage - same as for 14.4/24.9 kV, single phase
(5) Three-phase listing applies to 7.2/12.5 and 7.6/13.2 kV only
(6) 14.4/24.9 kV

Conditional List
U an(3)
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U an - Transformers, Distribution, Direct Burial*

(5-25 kVA only)

Conditions: To obtain experience.

Manufacturer	Metallic Tank (Cathodic protection required)	Nonmetallic Tank (Cathodic protection not used)
Central Moloney (Meeting 993, 6/8/72	"Trenchmite" 15-25 kVA Radial Feed or Loop Feed (same end) only	-
Sargent-Tyee (Meeting 1016, 5/10/73)	-	"No-Korrod" 10-25 kVA

*Direct burial transformers are at an early stage in their development. Large numbers of direct burial transformers should not be purchased from any one manufacturer by any one borrower in any one year. Carefull location records should be kept.

U ax - Cutout and Arrester, Combination for Underground System Pole Risers

Nominal System Voltage	For 12.5Y/ 7.2 kV		For 13.2Y/ 7.6 kV	For 24.9Y/ 14.4 kV
Cutout Maximum Voltage Rating	7.8 kV	15 kV	15 kV	27 kV
Application	1Ø Risers	3Ø Risers	1Ø and 3Ø Risers	1Ø and 3Ø Risers
Cutout Current Rating	100 amps	100 amps	100 amps	100 amps
Manufacturer	Catalog Numbers			
Chance	C70J-2B64 Series	C70J-2F54 Series	C70J-2F54 Series	
General Electric	9F80	9F80	9F80	
Joslyn	J9237-P2	J9237-P2/R	J9237-P2-R	J9267-D2
McGraw-Edison	AFS300B Series	AFS300C Series	AFS300C Series	AFS301D Series
Southern States	CA Series	CA Series	CA Series	CA Series

NOTE: The units listed on this page may be used with single arresters or arresters in parallel, but must be applied in accordance with paragraph VI.A. in REA Bulletin 61-3, "Underground Rural Distribution." Other arresters listed on pages ae-1 and ae-2 may be used for underground systems when applied in accordance with this bulletin.

Cutouts used on underground riser poles should be loadbreak type or have hooks for portable load interrupters.

Either normal duty or heavy duty distribution class arresters listed on page ae-1 are acceptable for use with these combination units.

U gu - Pedestal, Power

Refer to Construction Drawings UK5 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power Pedestals," U-6

Manufacturer	Inside Dimensions Inches	Height Inches	Catalog No.
Fargo	8 x 8	38	UP-1520C
	8 x 8	44	UP-1620C
	8 x 12	27	UP-1720C
	8 x 12	44	UP-1820C
	10 x 10	27	UP-2320C
	10 x 10	38	UP-2220C
	10 x 10	43	UP-2420C
	10 x 16	37	UP-2520C
Inter-Alloys	7.75 x 11	24	C-24128-PH
	7.75 x 15	24	C-24168-PH
	7.75 x 11.5	24	**PM-24128-PH
	7.75 x 15.5	24	**PM-24168-PH
Nordic	8 x 8	44	PR-50, PR-55
	9 x 14	30	PR-149 (stake) PR-150 (stakeless)
Utility Products	8 x 8	38	UP 8HLP
	8 x 8	46	UP 8HP
	10½ x 10½	26	UP 10HLP
	16½ x 10½	36	UP 1016HLP
	10½ x 10½	42	UP 10HP
Vertex	8 x 14	30	SP 814
Western Power	8 x 8	30	*SP-8, DF-3 (dead-front)
	9 x 9	30	*SP-9-DF-3
	9 x 9	30	SPM-90, DF-3 (stakeless)
	9 x 14	30	*SP-14-DF-3
	9 x 14	30	SPM-140, DF-3 (stakeless)

*Furnished with 48" stake
**Pole mounted

Conditional List
U gu(1)
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U gu - Power pedestal
Refer to Drawings UK6 and UM5-5

Applicable Specifications: "REA Specifications for Secondary Power Pedestals," U-6

Manufacturer	Meeting No. and Date	Conditions
ITT Blackburn		
Molded polyethylene with galvanized steel cover and ground lug. Catalog No. SDR-2PG	991 5/11/72	To obtain experience
Pen-Cell		
Molded polyethylene with galvanized steel or plastic cover	983 1/20/72	To obtain experience
Catalog No. PE-20-REA	1156 2/1/79	
Polycarbonate Box cover Catalog No. AG-20-6-REA	1191 7/24/80	
Sonoco Products Co.		
Duropipe (fiber) power pedestal with cast iron cover: 12", 15", 18" and 24"	836 3/10/66	To obtain experience
Burndy		
Molded polyethylene with galvanized steel cover. Catalog No. URD20G23	997 7/27/72	To obtain experience
Fargo		
HDPE, B-100R Series	1140(6/1/78)	To obtain experience
ABS, B-200R Series	1166(6/21/79)	
Carson		
Molded polyethylene with plastic cover Catalog Nos. 1324-13B and 1730-13B	1109 3/3/77	To obtain experience
Associated Plastics		
Molded polyethylene with galvanized steel or plastic cover Catalog Nos. 1730-1, 3; 1324-1, 3	1113 4/28/77	To obtain experience

U hb - Cable Accessories

(When ordering specify conductor size, type, whether copper or aluminum and insulation diameter)

200 Ampere Continuous Current Rating

Manufacturer	Meeting No. and Date	Conditions
ITT Blackburn		
15 kV, used with loadbreak connectors		To obtain experience.
Type LB2BA bushing plug		
Type ABOC insulating cap	1012 (3/15/73)	
Type JLB2BA bushing plug*		
25 kV, used with non-loadbreak connectors	1042 (5/30/74)	
Type LB2CA bushing plug	1110 (3/17/77)	
Type ABOCC insulating cap	1193(8/21/80)	
Burndy		
15 kV, used with loadbreak connectors	1019 6/21/73	To obtain experience.
Type LBP82 bushing plug		
Type LBPC82-11 insulating cap		
Elastimold (ESNA)		
15 kV, used with loadbreak connectors		To obtain experience.
Style 1601-CL cable lead	921 (6/26/69)	
Style 1602A3R feedthru insert*	1171	
Style 1601-A3R bushing plug*	9/6/79	
Style 160-DR insulating cap	924 (8/7/69)	
Style 1601CIBA3R	1174 (10/18/79)	
15 kV, used with non-loadbreak connectors	921	
Style 1501-A1 bushing plug	6/26/69	
Style 150-DP deadend plug	842	
Style 150-DR deadend receptacle	6/2/66	
25 kV, used with loadbreak connectors	964	
Style 2701-A1 bushing plug*	4/8/71	
25 kV, used with non-loadbreak connectors	921	
Style K-1501-A1 bushing plug	6/26/69	
Style K-150-DR deadend receptacle	945 (6/11/70)	

*Note: Asterisk indicates single or three phase. Other bushing plugs for use with loadbreak connectors are single phase only.

Conditional List
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U hb - Cable Accessories

(When ordering specify conductor size, type, whether copper or aluminum and insulation diameter)

Manufacturer	Meeting No. and Date	Conditions
General Electric		
15 kV, used with loadbreak connectors		To obtain experience.
Switch module 9U02AAA001	930(10/30/69)	
Switch module 9U02AAB001*	1133(2/16/78)	
Basic connector module 9U05 Series	930(10/30/69)	
25 kV, used with loadbreak connector		
Switch module 9U02BAA001	1016(5/10/73)	
Switch module 9U02BAB001*	1133(2/16/78)	
Insulating cap 9U01BEB001	1016(5/10/73)	
RTE		
15 kV, used with loadbreak connectors		
No. 2603711A12 protective cap	1033(1/17/74)	To obtain experience.
No. 2604797B01 bushing well insert*	1126 11/3/77	
No. 2625194A01 two-way bushing well insert*		
No. 2604231B01 bushing well plug		
25 kV, used with loadbreak connectors		
No. 2606591A02 protective cap	1033(1/17/74)	
No. 2604982B01M bushing well insert*	1148 9/28/78	
No. 2604975B01M two-way bushing well insert*		
35 kV, used with loadbreak connectors		
No. 2606630A01 protective cap	1048(8/22/79)	

*NOTE: Asterisk indicates single or three phase. Other bushing plugs for use with loadbreak connectors are single phase only.

U he - Enclosures, Sectionalizing Equipment (600 amp.)

Manufacturer	Meeting No. and Date	Conditions
S & C		
Mark III, Model PMH (with option G-5) 15-25 kV, 600 amp., three-phase switching and 200 amp. single-pole switching	1112 4/14/77	To obtain experience.
General Electric		
Series PSB (pad-mounted) and SSB (submersible) three-phase switching equipment, 200 or 600 amp., 15 or 27 kV	1022 8/2/73	To obtain experience.
Trayer		
800 Series, pad-mounted three phase vacuum switching equipment, 200 and 600 amps., 15-25 kV with or without fusing	1160 3/29/79	To obtain experience.
501 submerisble vacuum fuse enclosure, deadfront 200 or 600 amp., 15-25 kV	1160 3/29/79	
Type SSA (submersible, fused and unfused) 200 and 600 amp., 15-25 kV	1034 1/31/74	
Chance		
Type LVS (submersible and pad-mounted) single phase and three phase, vacuum switching equipment, fused or unfused, 200 or 600 amp., 15 kV	1074 9/25/75 1108 2/17/77	To obtain experience.
Electrical Equipment		
Type PSI 15 kV, 25 kV 600 amp, three-phase switching, and 200 amp, single-phase switching. (when ordering add suffix B-3)	1196 9/18/80	To obtain experience

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Specification U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

Conditional List
U he(3.1)
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U he - Enclosures, Sectionalizing Equipment (600 amp.)

Manufacturer	Meeting No. and Date	Conditions
RTE Type LBS, single and three phase, pad-mounted 15 kV	1095 8/11/76	To obtain experience.
ITT Blackburn Type SG6 (submersible) three-phase switching equipment, 600 amp., 15 or 25 kV	1112 4/14/77	To obtain experience
Kearney Series QE, QEE, QEI (all with option D1) pad-mounted 15 kV, 600 amp three-phase switching and 200 amp single pole switching	1184 4/10/80	To obtain experience.
Series VE - pad-mounted, 15 kVand 25kV, single phase and three-phase vacuum switching, fused or unfused 200 or 600 amps	1184 4/10/80	To obtain experience.
Series VP - submersible, single phase and three-phase, vacuum switching, 200 or 600 amp, 15 and 25 kV, with or without VACOP remote operator	1184 4/10/80	To obtain experience.

NOTE 1: Enclosures on this page must comply with the deadfront requirements of REA Spec. U-4.

NOTE 2: Single-pole switching of three-phase underground circuits may cause ferroresonance. Refer to REA Bulletin 61-3.

U hq - Terminations, Multipoint

Use With Non-loadbreak Connectors
(When ordering specify conductor size, type, whether copper or aluminum and insulation diameter)

Manufacturer	Meeting No. and Date	Conditions
Elastimold (ESNA)		
Style 150-T, T-Tap (15 kV)	873 7/27/67	To obtain experience.
Style K-150-T, T-Tap (25 kV)	921 6/26/69	
ITT Blackburn		
J2CA (2, 3, 4-way) 25 kV	1110 3/17/77	To obtain experience.
RTE		
VBJ-2, 2-way bushing, 15 kV, 2604670B01	1126 11/3/77	To obtain experience.
VBJ-3, 3-way bushing, 15 kV, 2604670B02		
VBJ-4, 4-way bushing, 15 kV, 2604670B03		

U hr - Secondary tap or splice cover, submersible

Manufacturer	Type or Catalog No.
Bishop	Splice-Wrap
Blackburn	Type DBS
Elastimold (ESNA)	Style 86
Homac	FSS Series
Kearney	Aqua-Seal Kit
3M	PST Series 8400
RTE	Aqua-Guard

Heat Shrink Tubing (with sealant throughout)

Manufacturer	Type or Catalog No.
AMP	Black heat-shrink tubing
Electrical Spec. Prod.	HSH
Panduit	Heat shrink Insulating Cover
Raychem	WCS cable sleeves
Sigmaform Corporation	Sigmaform heat-shrinkable products

U hv - Cable, Underground
15 kV Cable

Applicable Specification: REA Specification U-1
Conductor : Copper or Aluminum
#2 AWG through 1000 kcmil
Insulation : High Molecular Weight (HMW) or cross-linked (XL) polyethylene
Neutral : Copper Concentric Neutral

Manufacturer	Insulation	Flat Strap Neutral Available	Stabilized Neutral Design*
Alcoa	XL	Yes	Ridg-lok
Essex (Paranite)	XL	Yes	
Reynolds	HMW or XL	Yes	Secure-Neutral
Rome	HMW or XL	Yes	Serve-Lock
Southwire	XL	No	
Triangle	XL	Yes	

*Accepted design meeting the requirements of 7.5.2 REA SPecification U-1, for a minimum neutral with a maximum lay.

U hv - Cable, Underground
25 kV cable

Applicable Specification: REA Specification U-1
Conductor : Copper or Aluminum
No. 2 AWG through 1000 kcmil
Insulation : High Molecular Weight (HMW) or cross-linked (XL) polyethylene
Neutral : Copper Concentric Neutral

Manufacturer	Insulation	Flat Strap Neutral Available	Stabilized Neutral Design*
Alcoa	XL	Yes	Ridg-Lok
Essex (Paranite)	XL	Yes	
Reynolds	HMW or XL	Yes	Secure-Neutral
Rome	HMW or XL	Yes	Serve-Lock
Southwire	XL	No	
Triangle	XL	Yes	

*Accepted design meeting the requirements of 7.5.2 REA Specification U-1 for a minimum neutral with a maximum lay.

U hv - Cable, Underground
(15 or 25 kV cable)

TREE RETARDANT

Manufacturer	Meeting No. and Date	Conditions
Reynolds		
Reynotree HMW	1114(5/12/77) 1134(3/2/78) 1196(9/18/80)	To obtain experience
DFDA-6202 HMW	1151(11/16/78) 1196(9/18/80)	
Rome Cable		
Treban 100 HMW	1146(8/31/78) 1196(9/18/80)	To obtain experience
DFDA-6202 HMW	1155(1/18/79) 1196(9/18/80)	

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U hw - Warning sign

Applicable Specifications: REA Drawings UM12-1 and UM12-2

Manufacturer	Size (inches)	Danger Sign Catalog No.	Caution Sign Catalog No.
Brady*	7 x 10	46133	46043
	10 x 14	46131	46041
Dun-Lap*	7 x 10	DL-D710	DL-C710
	10 x 14	DL-D1014	DL-C1014
	14 x 20	DL-D1420	DL-C1420
	20 x 28	DL-D2028	DL-C2028
Eastern Metal*	7 x 10	REA 12-1-710	REA 12-2-710
	10 x 14	REA 12-1-1014	REA 12-2-1014
	14 x 20	REA 12-1-1420	REA 12-2-1420
	20 x 28	REA 12-1-2028	REA 12-2-2028
Lyle*	7 x 10	UM12-1-710	UM12-2-710
	10 x 14	UM12-1-1014	UM12-2-1014
	14 x 20	UM12-1-1420	UM12-2-1420
	20 x 28	UM12-1-2028	UM12-2-2028
May Advertising	7 x 10	MY710C	MY710B
	10 x 14	MY1014C	MY1014B
	14 x 20	MY1420C	MY1420B
	20 x 28	MY2028C	MY2028B
For pressure sensitive decal add "D" prefix to catalog number.			
Truck Sign Service*	7 x 10	TSD-710	TSC-710
	10 x 14	TSD-1014	TSC-1014
	14 x 20	TSD-1420	TSC-1420
	20 x 28	TSD-2028	TSC-2028

*Reflective signs also available.

The signs listed on this page are to be secured to equipment and transformer enclosures by means of an adhesive or by welding. Screws and rivets are not to be used.

U hx - Cable Route Marker

Manufacturer	Catalog No.
Surface Mounted	
Chance	C554-0001
Fargo	GM354
Above Grade	
Chance	C554-0183
Dun-Lap	DL-R45 DL-R712
Lyle	UM12-712
May Advertising	MY45A MY712A
For pressure sensitive decal add "D" prefix to catalog number.	
Truck Sign Service	BCW-712

Conditional List
U hy(1)

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U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether copper or aluminum and insulation diameter)

Manufacturer	Meeting No. and Date	Conditions
AMP		
"Ampact Splice" (35 kV)	1126(11/3/77)	To obtain experience
Burndy		
Type PMS162-K (15 kV)	981(12/16/71)	To obtain experience
Elastimold (ESNA)		
Style 1500S, straight splice, through #1/0 (15 kV)	1135(3/23/78)	To obtain experience
Style 25-S, straight splice, #2/0 through #4/0 (15 kV)	1135(3/23/78) 873(7/27/67)	
Style 25-Y, Y-splice (15 kV)	921(6/26/69)	
Style K-25-S, straight splice (25 kV)		
Style K-25-Y, Y-splice (25 kV)		
Style M-250-S, straight splice (35 kV)	1134(3/2/78)	
General Electric		
"Uni-Matic" (15 & 25 kV) (max. cable size 2/0)	977 10/14/71	To obtain experience
ITT Blackburn		
Type S4B (15 kV) Type S4C (25 kV)	1160 3/29/79	To obtain experience
3M		
"Quick Splice II" 5411, 5412 (15 kV) (#2 Awg thru #4/0 Awg)	1194(9/4/80)	To obtain experience
"Quick Splice" 5400 series (15 kV) (250 kcmil thru 750) 5420 series (25 kV)	969(6/17/71) 1024(8/30/73) 1032(12/20/73)	

U hy - Splice, Underground, Permanent

(When ordering specify conductor size, type, whether copper or aluminum and insulation diameter)

600 Ampere Continuous Current Rating

Manufacturer	Meeting No. and Date	Conditions
Elastimold (ESNA)		
Style 650-S, straight splice (15 kV) Style 650-Y, Y-splice (15 kV) Style K650-S, straight splice (25 kV) Style K650-Y, Y-splice (25 kV)	1016 5/10/73	To obtain experience.
Style M650S, straight splice (35 kV)	1064 5/1/75	To obtain experience.
RTE		
15 kV - 2604904B Series straight splice (MPS-600) 25 kV - 2604905B Series straight splice (MPS-600)	1122 9/8/77	To obtain experience.
Joslyn		
E7662 One-Man Splice (15 and 25 kV)	1111 3/31/77	To obtain experience.
ITT Blackburn		
15 kV - S65B straight splice 25 kV - S65C straight splice	1131 1/19/78	To obtain experience.

Conditional List
U ja(1)
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U ja - Transformer Pad

Manufacturer	Meeting No. and Date	Conditions
Carolina Dielectrics Model 0502-1 Fiberglass Size: 40" x 44"	1000 9/14/72	To obtain experience.
Chance C107-0162 and C107-0171 Fiberglass Size: 40" x 44"	994 6/29/72	To obtain experience.
Fiberglass Specialists Molded polyethylene Size: approx. 41" x 41"	989 4/13/72	To obtain experience.
Highline HL-46B, Fiberglass Size: approx. 42" x 42"	989 4/13/72	To obtain experience.
Plastic Structures No. 40402012 Molded polyethylene Size: 40" x 40"	997 7/27/72	To obtain experience.
Thermodynamics Poly-Pad, PR Series* Molded polyethylene	998(8/17/72) & 1009(2/1/73)	To obtain experience.
Sonoco Products No. 6000383 Reinforced plastic Size: 43" x 48"	1068 6/26/75	To obtain experience.
Carlon Composolite - PH Series	1141 6/15/78	To obtain experience.
Cyclo Dwg. No. 730126-2 Molded polyethylene Size: 42" x 42"	1147 9/14/78	To obtain experience.
Associated Plastics API 4000 Series RPM	1191 7/24/80 1194 9/4/80	To obtain experience

*Order by catalog number and size.